AMENDMENTS TO THE CLAIMS

Listing of claims:

This listing of claims replaces all prior versions of claims in the application.

1. (Currently Amended) A pedestrian navigation device for navigating the route of a pedestrian, comprising:

position information reception means for obtaining current position information;

position information analysis means for analyzing said current position information received by ~~the~~ said position information reception means and calculating ~~the~~ a current position a_i;

map information storage means for storing map information;

central processing means for calculating current position display information, based on said current position a_i calculated by said position information analysis means, and on said map information stored by said map information storage means; and,

display means for displaying said current position display information calculated by said central processing means; and characterized in that

said central processing means has pedestrian history information comprising a reference direction α indicating the direction of a past movement route and a reference distance β indicating a prescribed distance, takes the current position at the start of navigation to be reference point a_0, and, upon receiving the current position a_i after a prescribed time from said

position information analysis means, calculates the distance La0ai between said reference point

a0 and said current position ai, and when

$$\beta > La0ai \tag{1}$$

corrects said current position ai in the direction of said reference direction α and

calculates current position display information, but when

$$\beta \leq La0ai \tag{2}$$

corrects said current position ai in the direction of said reference direction α and

calculates current position display information, and in addition takes the corrected position of

said current position ai to be the new reference point, and takes the direction from the previous

reference point a0 to the new reference point to be the new reference direction α.

2. (Currently Amended)   A pedestrian navigation device for navigating the route of a

pedestrian, comprising:

position information reception means for obtaining current position information;

position information analysis means for analyzing said current position information

received by ~~the~~ said position information reception means and calculating ~~the~~ a current position

ai;

map information storage means for storing map information;

central processing means for calculating current position display information, based on said current position $\underline{a}i$ calculated by said position information analysis means, and on said map information stored by said map information storage means; and,

display means for displaying said current position display information calculated by said central processing means; and characterized in that

said central processing means receives the current position ai from said position information analysis means at prescribed intervals, and when the absolute value of the difference between ~~the~~ $\underline{a}$ direction angle Ai from the preceding current position ai-1 to the present current position ai and ~~the~~ $\underline{a}$ reference angle A is such that

$$\alpha0 \text{ (tolerance angle)} \geq |A\text{-}Ai| \qquad (3)$$

calculates current position display information from said current position ai, and takes the direction angle Ai to be the new reference angle A.

3. (Currently Amended) A pedestrian navigation device for navigating the route of a pedestrian, comprising:

position information reception means for obtaining current position information;

position information analysis means for analyzing said current position information received by ~~the~~ said position information reception means and calculating ~~the~~ $\underline{a}$ current position $\underline{ai}$;

map information storage means for storing map information;

central processing means for calculating current position display information, based on said current position a_i calculated by said position information analysis means, and on said map information stored by said map information storage means; and,

display means for displaying said current position display information calculated by said central processing means; and characterized in that

said central processing means takes the current position at the start of navigation to be the reference point a_0, receives the current position a_i at prescribed intervals from said position information analysis means, calculates the distance La_0a_i between said reference point a_0 and the current position a_i, and when

$$\beta \text{ (reference distance)} > La_0a_i \qquad\qquad (4)$$

calculates current position display information from said current position a_i, but when

$$\beta \text{ (reference distance)} \leq La_0a_i \qquad\qquad (5)$$

calculates current position display information from said current position a_i, and in addition takes said current position a_i to be the new reference point, and takes the direction from the previous reference point a_0 to the new reference point a_i to be the new reference direction α.

4. (Currently Amended) The pedestrian navigation device according to Claim 3, characterized in that said central processing means takes the current position at the start of navigation to be the reference point a_0, receives the current position a_i at prescribed intervals

from said position information analysis means, calculates the distance La0ai between said

reference point a0 and said current position ai, and when

$$\beta \text{ (reference distance)} > \text{La0ai} \qquad\qquad (4)$$

calculates current position display information from said current position ai, but when

$$\beta \text{ (reference distance)} \leq \text{La0ai} \qquad\qquad (5)$$

calculates current position display information from said current position ai, and in

addition takes ~~the~~ a current position a1 ~~next~~ calculated ~~after~~ next to said reference point a0 to be

the new reference point, and takes the direction from the previous reference point a0 to said

current position ai to be the new reference direction α.

5. (Currently Amended) A pedestrian navigation device for navigating the route of a

pedestrian, comprising:

position information reception means for obtaining current position information;

position information analysis means for analyzing said current position information

received by ~~the~~ said position information reception means and calculating ~~the~~ a current position

ai;

map information storage means for storing map information;

central processing means for calculating current position display information, based on

said current position ai calculated by said position information analysis means, and on said map

information stored by said map information storage means; and,

display means for displaying said current position display information calculated by said

central processing means; and characterized in that

said central processing means has a reference direction α indicating the direction of a past

movement route and a prescribed tolerance angle γ, takes the current position at the start of

navigation to be reference point a0, and, upon receiving the current position ai after a prescribed

time from said position information analysis means, calculates the direction a0→ai from said

reference point a0 to said current position ai, and

(a) if the direction a0→ai is outside the range of the tolerance angle γ from the reference

direction α, uses current position display information calculated using said reference point a0

without modification; but

(b) if the direction a0→ai is within the range of the tolerance angle γ from the reference

direction α, calculates current position display information using said current position ai, and

moreover takes ~~the~~ a̲ corrected position of said current position ai to be the new reference point,

and takes the direction from the previous reference point a0 to the new reference point ai to be

the new reference direction α.

6. (Currently Amended) A pedestrian navigation device for navigating the route of a

pedestrian, comprising:

position information reception means for obtaining current position information;

position information analysis means for analyzing said current position information

received by ~~the~~ said position information reception means and calculating ~~the~~ a current position

ai;

map information storage means for storing map information;

central processing means for calculating current position display information, based on

said current position ai calculated by said position information analysis means, and on said map

information stored by said map information storage means;

display means for displaying said current position display information calculated by said

central processing means; and,

direction measurement means for measuring the direction of advance; and characterized

in that

said central processing means takes the current position at the start of navigation to be

reference point a0, and upon receiving ~~the~~ a current position a1 after a prescribed time from said

position information analysis means, corrects said current position a1 in said direction of advance

measured by said direction measurement means and calculates current position display

information, and in addition takes the corrected position of said current position a1 to be the new

reference point.

7. (Currently Amended) A pedestrian navigation device for navigating the route of a

pedestrian, comprising:

position information reception means for obtaining current position information;

position information analysis means for analyzing said current position information received by ~~the~~ said position information reception means and calculating ~~the~~ a current position a_i;

map information storage means for storing map information;

central processing means for calculating current position display information, based on said current position a_i calculated by said position information analysis means, and on said map information stored by said map information storage means;

display means for displaying said current position display information calculated by said central processing means; and,

direction measurement means for measuring the direction of advance; and characterized in that

said central processing means takes the current position at the start of navigation to be reference point a_0, and upon receiving the current position a_i after a prescribed time from said position information analysis means, calculates the direction $a_0 \rightarrow a_i$ from said reference point a_0 to said current position a_i, and

(a) if the direction $a_0 \rightarrow a_i$ is outside the range of ~~the~~ a tolerance angle γ from said direction of advance measured by said direction measurement means, uses current position display information calculated using said reference point a_0 without modification; but

(b) if the direction a0→ai is within the range of the tolerance angle γ from said direction

of advance measured by said direction measurement means, calculates current position display

information using said current position ai, and in addition takes ~~the~~ a̲ corrected position of said

current position ai to be the new reference point.

8. (Previously Presented) The pedestrian navigation device according to Claim 6,

characterized in that said direction measurement means is an electronic compass.

9. (Previously Presented) The pedestrian navigation device according to Claim 6,

characterized in that said direction measurement means is a gyrosensor.

10. (Previously Presented) The pedestrian navigation device according to Claim 1,

characterized in that said position information reception means obtains current position

information from a GPS (Global Positioning System).

11. (Cancelled)

12. (Previously Presented) The pedestrian navigation device according to Claim 7,

characterized in that said direction measurement means is an electronic compass.

13. (Previously Presented) The pedestrian navigation device according to Claim 7,

characterized in that said direction measurement means is a gyrosensor.

14. (Previously Presented) The pedestrian navigation device according to Claim 2,

characterized in that said position information reception means obtains current position

information from a GPS (Global Positioning System).

15. (Previously Presented) The pedestrian navigation device according to Claim 3,

characterized in that said position information reception means obtains current position

information from a GPS (Global Positioning System).

16. (Previously Presented) The pedestrian navigation device according to Claim 4,

characterized in that said position information reception means obtains current position

information from a GPS (Global Positioning System).

17. (Previously Presented) The pedestrian navigation device according to Claim 5,

characterized in that said position information reception means obtains current position

information from a GPS (Global Positioning System).

18. (Previously Presented) The pedestrian navigation device according to Claim 6, characterized in that said position information reception means obtains current position information from a GPS (Global Positioning System).

19. (Previously Presented) The pedestrian navigation device according to Claim 7, characterized in that said position information reception means obtains current position information from a GPS (Global Positioning System).

20-25. (Cancelled)

26. (New) A computer program product usable with a computer having a computer program embodied therein, said computer having a central processing means, said computer program when executed by said computer causes the computer to perform the steps of:

(A) obtaining current position information;

(B) analyzing said current position information received by said step (A) and calculating a current position ai;

(C) storing map information;

(D) calculating, by said central processing means, current position display information, based on said current position ai calculated by said step (B), and on said map information stored by said step (C); and,

(E) displaying said current position display information calculated by said central

processing means; and characterized in that

said central processing means has pedestrian history information comprising a reference

direction α indicating the direction of a past movement route and a reference distance β

indicating a prescribed distance, takes the current position at the start of navigation to be

reference point a0, and, upon receiving the current position ai after a prescribed time from said

position information analysis means, calculates the distance La0ai between said reference point

a0 and said current position ai, and when

$$\beta > La0ai \tag{1}$$

corrects said current position ai in the direction of said reference direction α and

calculates current position display information, but when

$$\beta \leq La0ai \tag{2}$$

corrects said current position ai in the direction of said reference direction α and

calculates current position display information, and in addition takes the corrected position of

said current position ai to be the new reference point, and takes the direction from the previous

reference point a0 to the new reference point to be the new reference direction α.

27. (New) A computer program product usable with a computer having a computer

program embodied therein, said computer having a central processing means, said computer

program when executed by said computer causes the computer to perform the steps of:

(A) obtaining current position information;

(B) analyzing said current position information received by said step (A) and calculating a current position ai;

(C) storing map information;

(D) calculating, by said central processing means, current position display information, based on said current position ai calculated by said step (B), and on said map information stored by said step (C); and,

(E) displaying said current position display information calculated by said central processing means; and characterized in that

said central processing means receives the current position ai at prescribed intervals, and when the absolute value of the difference between a direction angle Ai from the preceding current position ai-1 to the present current position ai and a reference angle A is such that

$$\alpha 0 \text{ (tolerance angle)} \geq |A\text{-}Ai| \qquad\qquad (3)$$

calculates current position display information from said current position ai, and takes the direction angle Ai to be the new reference angle A.

28. (New) A computer program product usable with a computer having a computer program embodied therein, said computer having a central processing means, said computer program when executed by said computer causes the computer to perform the steps of:

(A) obtaining current position information;

(B) analyzing said current position information received by said step (A) and calculating a current position ai;

(C) storing map information;

(D) calculating, by said central processing means, current position display information, based on said current position ai calculated by said step (B), and on said map information stored by said step (C); and,

(E) displaying said current position display information calculated by said central processing means; and characterized in that

said central processing means takes the current position at the start of navigation to be the reference point a0, receives the current position ai at prescribed intervals, calculates the distance La0ai between said reference point a0 and the current position ai, and when

$$\beta \text{ (reference distance)} > La0ai \qquad (4)$$

calculates current position display information from said current position ai, but when

$$\beta \text{ (reference distance)} \leq La0ai \qquad (5)$$

calculates current position display information from said current position ai, and in addition takes said current position ai to be the new reference point, and takes the direction from the previous reference point a0 to the new reference point ai to be the new reference direction α.

29. (New) The computer program product according to claim 28, characterized in that said central processing means takes the current position at the start of navigation to be the

reference point a0, receives the current position ai at prescribed intervals, calculates the distance

La0ai between said reference point a0 and said current position ai, and when

$$\beta \text{ (reference distance)} > La0ai \qquad\qquad (4)$$

calculates current position display information from said current position ai, but when

$$\beta \text{ (reference distance)} \leq La0ai \qquad\qquad (5)$$

calculates current position display information from said current position ai, and in

addition takes a current position al calculated next to said reference point a0 to be the new

reference point, and takes the direction from the previous reference point a0 to said current

position ai to be the new reference direction α.

30. (New) A computer program product usable with a computer having a computer

program embodied therein, said computer having a central processing means, said computer

program when executed by said computer causes the computer to perform the steps of:

(A) obtaining current position information;

(B) analyzing said current position information received by said step (A) and calculating a

current position ai;

(C) storing map information;

(D) calculating, by said central processing means, current position display information,

based on said current position ai calculated by said step (B), and on said map information stored

by said step (C); and,

(E) displaying said current position display information calculated by said central

processing means; and characterized in that

said central processing means has a reference direction α indicating the direction of a past

movement route and a prescribed tolerance angle γ, takes the current position at the start of

navigation to be reference point a0, and, upon receiving the current position ai after a prescribed

time from said position information analysis means, calculates the direction a0→ai from said

reference point a0 to said current position ai, and

(a) if the direction a0→ai is outside the range of the tolerance angle γ from the reference

direction α, uses current position display information calculated using said reference point a0

without modification; but

(b) if the direction a0→ai is within the range of the tolerance angle γ from the reference

direction α, calculates current position display information using said current position ai, and

moreover takes a corrected position of said current position ai to be the new reference point, and

takes the direction from the previous reference point a0 to the new reference point ai to be the

new reference direction α.

31. (New) A computer program product usable with a computer having a computer

program embodied therein, said computer having a central processing means, said computer

program when executed by said computer causes the computer to perform the steps of:

(A) obtaining current position information;

(B) analyzing said current position information received by said step (A) and calculating a current position ai;

(C) storing map information;

(D) calculating, by said central processing means, current position display information, based on said current position ai calculated by said step (B), and on said map information stored by said step (C);

(E) displaying said current position display information calculated by said central processing means; and,

(F) measuring the direction of advance; and characterized in that

said central processing means takes the current position at the start of navigation to be reference point a0, and upon receiving a current position a1 after a prescribed time from said position information analysis means, corrects said current position a1 in said direction of advance measured by said step (F) and calculates current position display information, and in addition takes the corrected position of said current position a1 to be the new reference point.

32. (New) A computer program product usable with a computer having a computer program embodied therein, said computer having a central processing means, said computer program when executed by said computer causes the computer to perform the steps of:

(A) obtaining current position information;

(B) analyzing said current position information received by said step (A) and calculating a current position ai;

(C) storing map information;

(D) calculating, by said central processing means, current position display information, based on said current position ai calculated by said step (B), and on said map information stored by said step (C);

(E) displaying said current position display information calculated by said central processing means; and,

(F) measuring the direction of advance; and characterized in that

said central processing means takes the current position at the start of navigation to be reference point a0, and upon receiving the current position ai after a prescribed time from said position information analysis means, calculates the direction a0→ai from said reference point a0 to said current position ai, and

(a) if the direction a0→ai is outside the range of a tolerance angle γ from said direction of advance measured by said step (F), uses current position display information calculated using said reference point a0 without modification; but

(b) if the direction a0→ai is within the range of the tolerance angle γ from said direction of advance measured by said step (F), calculates current position display information using said current position ai, and in addition takes a corrected position of said current position ai to be the new reference point.